ApplicationNum	131	**Specify from cho**	
Application for (		**Specify from (k)**	
Principle Applic	Arcadia, City of-Public Works Service Dept.	**Does Proposal in**	☐
Project Title	Median Irrigation Conservation Program		
First Name-Aut	Pat		
Last Name (AA)	Malloy		
Title	Public Works Service Director		
Street Address			
PO Box	60021		
City	Arcadia		
State	Ca		
Zip Code	91066		
Telephone Num	(626) 256-65		
Fax Number (Inc	(626) 359-7		
E-mail Address			
First Name-Con	Clement		
Last Name-CP	Florez		
Contact-Title	Mgr. Contract Officer		
Contact-Street			
Contact-PO Box	60021		
Contact-City	Arcadia		
Contact-State	Ca		
Contact-Zip Cod	91066		
Contact-Phone	(626) 256-60		
Contact-Fax Nu	(626) 359-70		
Contact-E-Mail	cflores@ci.arcadia.ca.us		
Funds Requeste	$126,362.00		
Applicant Funds	$126,362.00		
Total Project Co	$252,725.00		
Estimated Total	$194,568.40		
Percentage of Be	100%		
Percentage of Be	0%		
Estimated Annu	40.24		
Estimated Total	402		

Over _____ Nu	10
Estimated Benef	Electrical Cost savings of $3448.97/yr
Duration of Proj	10/02-10/05
State Assembly	59
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State-Wide	☐
County-location	Los Angeles

Most recent Urb	
Type Applicant-	a) City
DWR WUE Proje	
Project Focus	b) Urban
Project Type	a) Implementation of Ur
Quantifiable Ob	0

B. Scope of Work

1. Proposal Summary

While the City of Arcadia currently enjoys green median and recreational areas, we also realize our susceptibility to periods of drought that affect landscape growth and living conditions. In an effort to reduce future water demands, the City is proposing the Median Irrigation Conservation Program Project as a positive water conservation solution.

The ET Irrigation Controller is used to conserve water while simultaneously keeping grass and plants adequately watered. Unlike conventional irrigation controllers that are programmed to turn on and off at a predetermined day and time regardless of environmental factors: the ET (Evapotranspiration) Calsense Controller uses measurements from a centralized ET Gage to determine the moisture evaporation rate from the soil and plants to the ambient. The fact that ET Controllers are able to take the measurements calculated from the ET Gage allows them to conserve and manage their own water output depending on demand.

The ET Calsense Controllers described in this proposal will be monitored from one centralized computer referred to as the CALSENSE Command Center using computer software to pass information between the irrigation controllers and the Command Center. This allows the user to communicate, monitor, re-program, or gain direct access to the controller(s) from a remote location through local radio. The CALSENSE Command Center is a system designed to pinpoint the cause and exact location of problem areas from its daily ALERT report. The system detects the problems based on water usage history per station learned by the controller. Examples of such problem areas include information on sprinkler head brakes, lateral and mainline breaks, and electrical fault detection. Thus the daily ALERT reports will allow maintenance crews to quickly remedy needless water loss situations. Currently, since irrigation occurs during the night hours, the City relies on residents or the Police department to report irrigation problems that may have occurred several days or longer before detection. Thus, irrigation problems usually cause substantial loss of water before corrected. Also, for lateral and main line breaks, each controller is programmed to automatically shutoff when a predetermined over-flow limit is reached.

To implement our water conservation program, the City of Arcadia Public Works Services Department intends to install twenty-seven (27) Calsense Controllers along the irrigated medians of four of the most visible and larger arterial medians of the City. The medians included in this proposal are: Santa Anita Avenue, 236,435 sq. ft., from the northern to the southern limits of our city from @ Grandview Ave. to Live Oak Ave.; Foothill Boulevard, 29,900 sq. ft., from Santa Anita Ave. to our western city limit @ Michillinda Ave.; Baldwin Avenue, 67,540 sq. ft., between Foothill Blvd. to our southern city limit @ Live Oak Ave.; and Huntington Drive, 13,500 sq. ft., from City Hall to our eastern city limit @ 5th Ave. The total square footage for the irrigated medians is 347,375. Please see the attached Project Location Map for area of the proposal.

The four main arterials (Santa Anita Ave., Foothill Blvd., Baldwin Ave., and Huntington Dr.) selected for the proposed ET Calsense Controllers was established due to the pride residents have for these traffic corridors. For example, Baldwin Avenue is a high volume North/South traffic arterial for our city, recognized by visitors, affiliated with the world famous Santa Anita Park, the Los Angeles County Arboretum, and the City's founder, Lucky Baldwin. Therefore, staff spends additional time ensuring that the plants and trees in these locations remain adequately irrigated to provide an aesthetic pleasing landscape for residents and visitors.

In choosing an irrigation system that would provide a vast increase in water conservation over a short period of time (i.e. three (3) months to one (1) year), staff reviewed information collected from cities that already had ET Controllers in place. The City of Arcadia also evaluated three different brands of ET Controllers with each providing similar results. However, CALENSE provided the greater reliability, flexibility, and less dependence on the vendor's technical assistance. In addition, City staff focused on a previous pilot study conducted by Calsense in Mesa, Arizona. Calsense conducted the study to document water consumption before and after the installation of the ET Calsense Controllers. The area covered in their study was approximately 59,000 square feet of turf. After the ET Calsense Controllers were installed documentation demonstrated tremendous water savings of over thirty (30) percent annually. Climate conditions of this area of study are similar to that of the City of Arcadia, therefore City staff anticipates even greater savings than the area study due to obtaining current ETo (Calsense ET Gage) information and better field maintenance due to generated daily Alert reports. The City of Arcadia is confident it can relate even greater water savings than experienced by Mesa to our city because CALSENSE reports an average annual water conservation of about the same, 25 to 50 percent, for cities throughout the United States that have implemented the system. The system will provide an expected savings of up to **40%** because of the valuable information that the ET Calsense Reports will provide to maintain irrigation lines and sprinkler heads immediately.

2. Statement of Critical Issues

Since 1931, the state of California has been taking more than its allotted apportionments of water from the Colorado River Aqueduct. California was able to take more water each year because the Secretary of the Interior declared a surplus. The surplus of water mostly occurred due to Arizona and Nevada not taking their full water allotments. However, in recent years, both Arizona and Nevada have begun taking more of their apportionment of water thus leaving less water for California. In addition, water supplies to Southern California from the State Water Project are decreasing as the population continues to increase. Therefore, it is imperative that Southern California shows a major increase in water conservation within a short period of time.

As the population of California continues to rapidly increase, demands for additional water will similarly intensify. Creating new water supplies or buying water from other states are costly alternatives to water conservation. Unquestionably, conservation is the most cost-effective approach to balancing the water saving needs of the state for the annual water consumption desired by individuals.

In response to the required need to preserve water, the ET Calsense Controller is the most reasonable and cost-effective conservation approach. In addition, the Calsense Controller is consistent with state water management plans. The Department of Water Resources lists the best escalation of water savings and preparation of sensitivity analysis to decide cost savings for a City's water irrigation system by using plant coefficients and an ETo measurement. The ETo measurement that the Department of Water Resources uses to calculate water savings and sensitivity analysis can be obtained from the ET Calsense Gage.

As stated under the Proposal Summary, staff will monitor the ET Calsense Controllers and the ET Gage to ensure that the irrigation system is demonstrating the maximum water conservation. Staff will also ensure that our water savings are properly documented so that other Southern California cities can reproduce and apply the information to install a similar irrigation system throughout their own city.

3. Project Nature, Scope, and Objectives

The City of Arcadia currently has seventeen (17) stand alone ET Calsense Controllers distributed throughout cities facilities, parks, and medians. Each of these controllers was installed as stand alone controllers when a renovation project occurred to anticipate a future conservation program. It should be noted that water conservation amounts have not been obtained with stand alone ET Calsense Controllers since water leak problems could only be monitored and evaluated at the actual controllers due to the needed equipment not yet working in conjunction with the ET Calsense Controllers. We are currently in the process of installing in place the ET Gage and local radio equipment needed for communication between the Calsense Controllers, ET Gage, and a central computer for monitoring the water flow needed to conserve and adequately irrigate the landscaping. The intention of this project is to install an additional twenty-seven (27) ET Calsense Controllers complete with local radio along four (4) of our most visible and larger arterial medians to begin a more comprehensive water conservation program in the City. By having ET Calsense Controllers throughout the city, staff will haves more assessable documented information for research in our localized area.

Similar to previous ET Calsense Controller installations within the city, staff will supervise the location for installation and any maintenance necessary to maintain the equipment. The Cities landscape maintenance contractor will complete the installation of the ET Calsense Controllers. The landscape maintenance contractor is familiar with the irrigation system and landscaping needs of the City and staff will closely work along side the contractor to first hand monitor and quickly implement any changes necessary to ensure success of the project.

Programs of this nature have a seasonal change in the amount of water conservation. If awarded this grant, staff will observe the seasonal water conservation efforts of the ET Calsense Controller to make projections for future public conservation goals.

4. Methods, Procedures, and Facilities

The ET Calsense Controllers will be placed in highly visible areas surrounding our city. Our City's Public Works Services Department staff will conduct and oversee the installation.

After the controllers are in place, staff will field check the landscape to ensure it is properly irrigated. Staff will also monitor the water conservation rate to verify that the equipment and controllers are operating correctly to provide optimum water savings. Staff intends to conduct a before-and-after study to ensure the success of the project. The amount of water consumed after the ET Calsense Controllers, ET Gage, and central monitoring system are in place will be compared to the amount of water consumed before the water conservation program was initiated. Staff will have the before and after research available by the end of each quarter. However, Staff does expect to see a vast difference in the conservation amount of water immediately. Staff contends that we will be able to see a significant conservation amount by comparing current monthly meter readings with that of the previous year's monthly meter readings.

ET Calsense Controllers are relatively new and with is little research information on water conservation rates by City's that implement the program. Our hope, by conducting an in-depth study, is that our findings' will be important assessable information to other Southern California cities that wish to conduct an irrigation conservation program.

5. Monitoring and Assessment

Staff will provide ongoing reports on the project's progress throughout the installation and initial start-up phase (See Table One: Task Work Schedule). Staff will also conduct a post program review on water savings against pre-water use histories in the areas the new ET Calsense Controllers are placed and as well as the previously mentioned existing (17) ET Calsense Controllers in place throughout the city. Therefore, staff will have a report on the specific water savings of all forty-four (44) ET Calsense Controllers located throughout the City of Arcadia.

This data will provide statistical information for justification of an additional (30) ET Calsense Controllers replacing all existing fixed usage controllers throughout the City of Arcadia.

Major Program Tasks	Deliver-able Time Frame	Implemen-tation Time Frame	Projected Program Cost Amount= $252,725	Projected CALFED Grant Request= $126,362
Identify Installation Contractor, Award Contract, and Place Order for ET. Controllers.	October 2002	October 2002	$158,225	$79,112
Receive ET. Controllers and begin installation on Santa Anita Ave.	November 2002	November 2002	$45,500	$22,750
Installation of ET. Controllers on Foothill Blvd. and Baldwin Ave.	December 2002	December 2002	$28,000	$14,000
Installation of ET. Controllers on Huntington Drive	January 2003	January 2003	$21,000	$10,500
Installation of ET. Controllers will be complete and begin preparing monthly project report.	February 2003	February 2003	-	-
		Totals	**$252,725**	**$126,362**

Table One: Task Work Schedule

Expenditure Projection: The City of Arcadia to Match CALFED Grant Request

See Table 2 For Task Work Schedule Totals Summary

C. Outreach, Community Involvement, and Information Transfer

1. Outreach Efforts

This program will be implemented on highly visible medians in our city: Santa Anita Avenue, Foothill Blvd., Baldwin Ave., and Huntington Drive.

Santa Anita Avenue is a main corridor to many well-known tourist locations such as the world famous Santa Anita Park, the Department of Forestry's Chantry Flats, and the City's Wilderness Park. Santa Anita Avenue is a main transportation arterial for may visitors to the city and its median is one of the most visible aspects of our city.

Foothill Blvd. is historically known throughout the United States as Route 66. Foothill Blvd. is a focal point of American history that transcends eight (8) states and three (3) time zones. Moreover, it is considered "The Main Street of America".

Baldwin Avenue and Huntington Drive are main access streets for visitors entering the City of Arcadia from the south and/or the east and west. Baldwin Ave. connects to Foothill Blvd. while Huntington Drive connects to Santa Anita Ave. and is therefore, aesthetically important access routes for residents and visitors.

The City of Arcadia understands the importance of having an aesthetically pleasing landscape while conserving our most important natural resource, Water. It is for that reason staff selected the streets of Santa Anita Ave., Foothill Blvd., Baldwin Ave., and Huntington Dr. as locations that both residents and visitors will best welcome the benefits of the water conservation irrigation controllers.

2. Giving back to our Residents

The City of Arcadia currently relies on city-owned wells to supply 100% of the water to our residents. Thus the irrigation system that supplies our resident's drinking water and City's landscape irrigation originates from the same water source. Staff contends that by continuing to install ET Calsense Controllers throughout the city's landscape, we will conserve enough water to pass that savings along to our residents. Such a savings will help ensure that Arcadia will not have to supplement water resources with outside water agencies, thus keeping water rates affordable to our residents.

D. Qualification of Applicants

As previous stated in section B-3, Engineering an Operations staff will oversee the installation of the ET Calsense Controllers. Staff has experience with installing ETCalsense Controllers in seventeen (17) locations throughout the city. Those locations include but are not limited to: parks, City facilities, and medians. Therefore, staff is

confident that we can do the installation and monitoring of the project. In addition, staff will save a magnificent cost by using city employees for maintenance and research of project developments.

Project Personnel:
Gary Lewis, General Services Manager
Lubomir Tomair, Associate Civil Engineer, P.E.
Ken Herman, Assistant Civil Engineer, P.E.
Clement Flores, Contracts Maintenance Officer

E. Cost and Benefits

1. Budget Summary

The average estimated cost to purchase one ET Calsense Controller, including all installation material, labor, and taxes is $9,361.

The Proposal total cost to implement the project for (27) controllers is $252,725. (Please see Table One for the Budget Breakdown.)

2. Budget Justification

The budget for this Project in Table One is necessary to assure its success. Funding is essential for the purchase of twenty-seven (27) ET. Controllers to irrigate the medians of Santa Anita Ave., Foothill Blvd., Baldwin Ave., and Huntington Dr. The ETGage that is required by the ET Calsense Controllers to tell the computer when to turn the irrigation system on and off has already been purchased by the City and is therefore, not included in the project budget.

3. Benefit Summary

The total water savings from this project are estimated to be 40.24 acre-feet per year. Today's value of the conserved water for the City of Arcadia is **$**483.52 per acre-foot for a yearly savings of $19456.84.

a. (**Please see Table 3 for Breakdown**)
Total water used in 2001 Program Study: $1.11c/cf is the cost of water in Arcadia

Santa Anita 27630
Foothill 2817
Baldwin 8551
Huntington 4820
Total = 43818 ccf 43818ccf/yr x $1.11/ccf= $48,638/yr

Cost Savings; $48638 x 40%= **$19455.19/yr or $$194,551.9/10 years**

Cost per acre-foot; $1.11 c/cf x (1/100) x 43560 cf/a-f = $ 483.52 acre-foot

Acre-foot used; 43818cf/c x 100 x (1 a-f/43560 cf) = 100.59 acre-foot

Acre-foot saved: 100.59 a-f x 40 % = 40.24 acre-foot

Other Benefits: Utility Costs (Edison); $85.71/acre-foot to Pump Water to Reservoirs Cost Savings; 40.24 a-f/yr x ($85.71/ a-f) = $ 3,448.97/yr

b. Qualitative benefits for this Program include:

- Savings to aquifers provide ecological and environmental benefits
- Reduce outdoor water use
- An aesthetically pleasing environment and landscape
- Healthier plants, shrubs, and turf
- Less pesticide and fertilizer runoff

4. Breakdown of Cost

Staff intends to install a total of twenty-seven (27) ETCalsense Controllers along the medians of four (4) of our most visible traffic arterials. The breakdown of the number of ET Calsense Controllers installed and the material & labor costs for each median is documented in **Table 2** below.

Table 2: Breakdown for the Cost of Installation of ET. Controllers Per Median

Street Name	# of ET. Controllers Installed	Cost for ET. Controllers (w/tax)	Labor Costs to Install and Retrofit
Santa Anita Ave.	13	$75,196	$45,500
Foothill Blvd.	3	$17,550	$10,500
Baldwin Ave.	5	$29,642	$17,500
Huntington Drive	6	$35,837	$21,000
Total	27	$158,225	$94,500

Note: Price of Controllers vary between 8,12,18,24 & 32pment Station Models needed at specific locations

Total Equipment Costs: (27) Controllers = $158,225 (Includes SSE Enclosure & Local Radio)
Total Labor Costs: (27) @ $3500 = $ 94,500 (Includes Misc. Retrofitting)

$252,725

Avg. Price Per Controller $158,225/9=$9,361

Table Three: 2001 Median Water Conservation Projection

Median	Units of Water Used (CC) in 2001	Water Used in Acre Feet	Cost Per Median 1.11/CC	Projected Savings (40%)	Projected Savings in A-F
Santa Anita	27,630	63.43	$ 30,669.30	$ 12,267.72	25.37
Foothill Blvd.	2,817	6.47	$ 3,126.87	$ 1,250.75	2.59
Baldwin Ave.	8,551	19.63	$ 9,491.61	$ 3,796.64	7.85
Huntington Dr.	4,820	11.07	$ 5,350.20	$ 2,140.08	4.4
			Total Savings Per Acre	$ 19,455.19	40.21